

REMARKS

Claims 11-16 and 18-26 are pending in this application. All previous rejections have been withdrawn and all pending claims are now newly rejected in the pending Office Communication. Claims 12, 13, 19 and 21-24 are rejected under 35 USC 112, second paragraph. Claims 22-24 are rejected under 35 USC 102(a and e) as being anticipated by Konter. Claims 11-13, 18-21 and 25 are rejected under 35 USC 103(a) as being unpatentable over Konter in view of Terkelsen. Claims 14 and 15 are rejected under 35 USC 103(a) as being unpatentable over Konter in view of Terkelsen and further in view of Schnell. Claims 16 and 26 are rejected as being unpatentable under 35 USC 103(a) over Konter in view of Terkelsen and further in view of Caballero.

Rejections under 35 USC 112:

Claims 12, 13, 19 and 21-23 are amended herein in accordance with the Examiner's findings to overcome the rejections under 35 USC 112, second paragraph.

Rejections under 35 USC 102:

Independent claim 22 has been amended herein to clarify that the intermediate layer is "a metallic intermediate layer". In contrast, Konter teaches away from this limitation by teaching an intermediate layer (filling material 3) that is ceramic. Accordingly, the rejection under 35 USC 102 should be withdrawn because the prior art fails to teach each limitation of the claims.

Furthermore, the filling material 3 of Konter is a fugitive material that is later removed to form cooling passages. Thus, it would not be obvious to modify Konter to use a metallic material as the filling material 3 since that would destroy the functionality of Konter because a metallic material would not function as a fugitive material.

Thus, the rejection of independent claim 22 and its dependent claim 23 under 35 USC 102 should be withdrawn. Since no other rejection has been applied against independent claim 22, **claims 22-24 are now in condition for allowance.**

Rejections under 35 USC 103:

Independent claims 11 and 25 stand rejected as being unpatentable over Konter in view of Terkelsen.

Each of independent claims 11 and 25 has been amended herein to clarify that the intermediate layer is “a metallic intermediate layer”. As discussed above, Konter teaches away from this limitation by teaching an intermediate layer (filling material 3) that is ceramic. The secondary reference to Terkelsen fails to correct this deficiency in the primary reference. Thus, the rejections of independent claims 11 and 25 under 35 USC 103, as well as those of the claims depending there from, should be withdrawn. Since no other rejection has been applied to independent claim 11 or independent claim 25, **claims 11-16, 18-21, 25 and 26 are now in condition for allowance.**

Furthermore, should the Examiner rely upon the Terkelsen reference in future Office Communications, the Applicants make the following observations for the Examiner’s consideration.

First, the Examiner states that Terkelsen teaches an intermediate layer having “a directional structure” (page 10 of the Office Communication), and then finds that it would have been obvious for one of ordinary skill in the art to grow “the intermediate layer with a directional microstructure” (page 11 of the Office Communication). The Examiner should note that each of the pending claims includes the limitation that the intermediate layer has no single-crystal or directional structure. Thus it would appear Terkelsen can not support a *prima facie* case for obviousness.

Second, the Examiner states that one of ordinary skill in the art to modify Konter by “providing a structure defect on the surface substrate” as suggested by Terkelsen. The Applicants suggest that no person skilled in the art of materials would modify a gas turbine material such as taught in Konter by providing a structure defect. The whole science of superalloy materials is devoted to avoiding structure defects, and to suggest that a person of ordinary skill in the art would modify the process steps of Konter to provide a structure defect is without merit.

Third, the Examiner interprets the addition of boron or an oxide material to the seed of Terkelsen as teaching “a structure defect at a surface of the substrate in which the single crystal buildup layer being isolated from the structural defect of the substrate by the intermediate layer

Serial No. 10/541,691
Atty. Doc. No. 2002P17431WOUS

wherein the structure defect at the surface of the substrate is not copied into the intermediate layer” (page 11 of Office Communication). The Applicants disagree. Terkelsen acknowledges that prior art seeds might have surface contamination layers or might experience incomplete surface melting such that a defect would be formed in the material molded onto the seed. However, any such resulting defect would be subsurface. Furthermore, Terkelsen uses boron or an oxide coating to eliminate any such defect, so there is no “isolation” of a defect from an overlying layer, but rather, such defects are prevented from occurring at all by Terkelsen. Thus, the Examiner’s interpretation of Terkelsen appears to be guided more by hindsight of the presently claimed invention than by the teaching of the prior art document itself.

Conclusion:

Reconsideration of the amended application and allowance of claims 11-16 and 19-26 are respectfully requested. The commissioner is hereby authorized to charge any appropriate fees due in connection with this paper, including the fees specified in 37 C.F.R. §§ 1.16 (c), 1.17(a)(1) and 1.20(d), or credit any overpayments to Deposit Account No. 19-2179.

Respectfully submitted,

Dated:

Jan. 21, 2009

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